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Parallel evolution of deformation textures and dislocation boundaries

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During plastic deformation of metals like aluminium, nickel and copper, deformation textures evolve in parallel with dislocation boundaries. The dislocation boundaries exhibit a preferred crystallographic alignment, which correlates with the crystallographic grain orientation. The focus is on the evolution of dislocation boundaries in the stable texture fibres, in particular after rolling but also tension and compression will be included. It is investigated to which extent the experimentally observed dislocation boundary alignment can be predicted by a combination of crystal plasticity and dislocation theory.